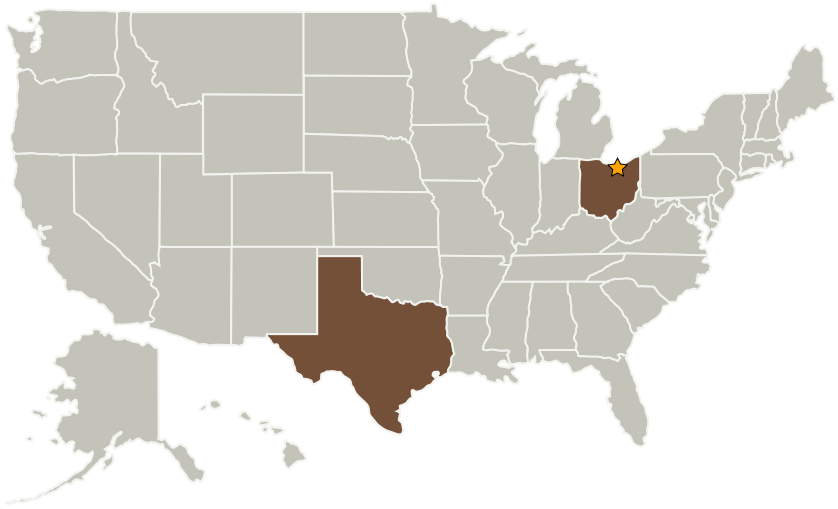
In Situ Oxygen Production from Lunar and Martian Regolith, Phase I

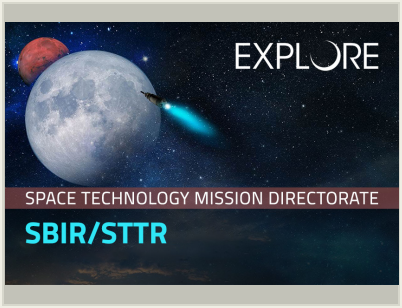
Completed Technology Project (2006 - 2006)

Project Introduction

In situ oxygen production is of immense importance to NASA in the support of the NASA initiative to sustain man's permanent presence in space. The oxygen produced can be used as breathable oxygen, as a source of fuel for Moon or Mars based vehicles (for either return to Earth or as a basis for further space exploration), or as a source of oxygen for fuel cell or other power generating devices. Lynntech proposes to use plasma technology to liberate the oxygen bound in the oxides of regolith to produce oxygen in situ on either the moon or Mars. Lynntech's innovative solid feedstock plasma reformer is simple, robust and unaffected by variations in the composition or particle size of the regolith. Lynntech has previously demonstrated the principle of plasma reformation on a variety of projects and has preliminary results demonstrating the technology proposed here. Lynntech is currently developing plasma reformers for the US Air Force capable of producing several SCFM of hydrogen from JP-8 as well as multi-fuel (gas/liquid) capable reformers. A small (< 10W) plasma reformer has also been demonstrated for the production of hydrogen on Titan for NASA.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Lynntech, Inc.	Supporting Organization	Industry	College Station, Texas

Primary U.S. Work Locations	
Ohio	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.1 In-Situ Resource Utilization
    - TX07.1.4 Resource Processing for Production of Manufacturing, Construction, and Energy Storage Feedstock Materials